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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,708	09/22/2003	Jie-Wei Chen	03-495	9248

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EXAMINER	
BROWN, JAYME L	
ART UNIT	**PAPER NUMBER**
1733	

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/667,708	CHEN ET AL.	
	Examiner	Art Unit	
	Jayme L. Brown	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/7/05 and 9/22/03*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) *6-11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 September 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/22/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-5 in the reply filed on 10/7/05 is acknowledged.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 9/22/03 has been considered by the examiner. The article was not considered because of failure to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Drawings

3. The drawings are objected to because items 15 and 16 are not labeled in Figure 2, as mentioned in paragraph [0020] of the Specification. **Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.** Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended

drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities:

On page 4, paragraph [0020], "receiving head 15" should be changed to - - machining head 15 - - in order to stay consistent throughout the Specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claim 1 recites the limitation "the laser beam" in lines 2, 3, and 5. There is insufficient antecedent basis for this limitation in the claim.

b. Claim 1 recites the limitation "the site" in line 5. There is insufficient antecedent basis for this limitation in the claim.

c. Claim 1 recites the limitation "the guiding" in line 5. There is insufficient antecedent basis for this limitation in the claim.

d. Claim 1 recites the limitation "the mechanical compression" in lines 5-6. There is insufficient antecedent basis for this limitation in the claim.

e. Also regarding claim 1, it states that the workpieces are joined to one another under pressure during a subsequent cooling. It is unclear how the cooling takes place under pressure, if the guiding of the laser beam (melting) and the mechanical compression (joining) are being carried out simultaneously. If the workpieces are still under pressure from the machining head during the cooling, is the laser beam stopped? Are the workpieces being cooled after the laser beam passes over them, while the machining head continues to travel along the workpieces? In other words, are some areas of the workpieces under pressure while other areas of the workpieces are cooling? For the purposes of this Office Action, the cooling step will be considered as taking place after the simultaneous guiding of the laser beam and mechanical compression.

f. Claim 2 recites the limitation "the point of infringement" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

g. Claim 2 recites the limitation "the laser beam" in line 2. There is insufficient antecedent basis for this limitation in the claim.

h. Claim 3 recites the limitation "the welding contour" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

i. Regarding claims 3 and 4, "the machine head" should be changed to - - the machining head - - to keep consistent with the rest of the claims.

j. Claim 4 recites the limitation "the local plane" in line 1. There is insufficient antecedent basis for this limitation in the claim.

k. Regarding claim 4, item 6 (line 3) is a workpiece and not part of an integrated lens system. It is noted that item 2 might be the correct item number.

l. Claim 5 recites the limitation "the contour for the entire joint" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

m. Regarding claim 5, line 3, the word - - during - - should be inserted before "the second step".

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Nakamata (U.S. Patent 4,636,609).

Regarding claim 1, Nakamata discloses a method for joining workpieces made from plastic, the upper workpiece (2), facing a laser source, consisting of a material transparent to the laser beam, and the lower workpiece (1) consisting of a material absorbent to the laser beam, such that the mutually bordering contact surfaces for the two workpieces melt and are joined together under pressure during a subsequent cooling, wherein the guiding of the laser beam onto the site to be joined, and the mechanical compression of the workpieces are carried out simultaneously by a machining head (4) Column 3, line 32 – Column 5, line 21; Figures 1-4). Nakamata anticipates claim 1.

9. Claims 1-5 are rejected under 35 U.S.C. 102(b) as anticipated by Wannebo (SE 510621).

Regarding claim 1, Wannebo teaches a method for joining workpieces made from plastic, the upper workpiece (11), facing a laser source, consisting of a material transparent to the laser beam, and the lower workpiece (12) consisting of a material absorbent to the laser beam, such that the mutually bordering contact surfaces for the two workpieces melt and are joined together under pressure during a subsequent cooling, wherein the guiding of the laser beam (L2) onto the site to be joined, and the mechanical compression of the workpieces are carried out simultaneously by a machining head (2, 3) (Abstract; Figure1). Wannebo anticipates claim 1.

Regarding claim 2, Wannebo teaches that the workpieces are compressed at the point of infringement of the laser beam in a punctiform fashion along a line (Figure 1).

Regarding claim 3, Wannebo teaches that the machining head appears to move along the welding contour while touching the upper workpiece (Figure 1).

Regarding claim 4, Wannebo teaches that the local plane of the machining head is determined by an IR-transparent pressure element, preferably a rotary pressure element, and an integrated lens system (13) and is set in the integrated lens system (Figure 1).

Regarding claim 5, Wannebo teaches that the workpieces are locally fixed in a first step at one or more defined sites with the aid of the machining head, and subsequently it appears that the contour for the entire joint is traveled along during the second step (Figure 1).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamata (U.S. Patent 4,636,609) in view of Azdasht (DE 4319742) and/or Itagaki (JP 58163587).

Regarding claims 2 and 3, Nakamata is relied upon for the teachings above. Nakamata also teaches that the machining head (nozzle) can be moved along the outer surface of the upper workpiece during irradiation by the laser beam, if the end of the machining head isn't in contact with the outer surface of the upper workpiece, and that the workpieces are compressed at the point of infringement of the laser beam (Column 4, lines 19-23, Figures 1-4).

Nakamata is silent toward compressing the workpieces at the point of infringement along a line and that the machining head is moved along a welding contour while touching the upper workpiece.

It is known and conventional to move a machining head along the welding contour using a rotary pressure element as shown for example by Azdasht. Azdasht is directed to a method for bonding materials with a laser beam using laser soldering pen (an optically transparent ball mounted in a bond head). Azdasht teaches that the workpieces are compressed and that the machining head is touching the upper workpiece. Azdasht also teaches that the machining head (a ball mounted in a bond head) can be passed over the surface (moved along the welding contour) allowing for free movement of the laser beam (along a line) while the workpieces to be joined are simultaneously pressed together (Abstract; Figure).

Another example of moving a machining head using a rotary pressure means is shown by Itagaki. Itagaki is directed toward laser welding workpieces (1a, 1b) using an apparatus that has a wheel (17) fixed in the leg part (7a) of a nozzle (7), which forms an optical path for irradiation of laser light (10). The wheel rolls in contacting with the

surface of the upper workpiece in the leg part of a nozzle, which forms an optical path for irradiation of laser light. The workpieces are brought into contact with each other under the proper pressure, preventing the formation of a gap (Abstract; Figure).

One skilled in the art would have readily appreciated mounting an optically transparent ball or a wheel in the machining head (nozzle) so that it is capable of moving along the surface of the upper workpiece while being in direct contact with the surface. One skilled in the art would also have readily recognized that continuously moving the machining head would eliminate the unnecessary step of picking up the machining head (nozzle) in order to move it to the next site to be bonded. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an optically transparent ball or a wheel in the machining head in the method of Nakamata as suggested by Azdasht and/or Itagaki.

Regarding claim 4, Nakamata, Azdasht, and Itagaki are relied upon for the teaching above. Nakamata also teaches that the local plane of the machining head is determined by an integrated lens system (41) and is set by the integrated lens system (Figures 1-4). Nakamata is silent toward the local plane of the machining head being determined by an IR-transparent pressure element, preferably a rotary pressure element.

One skilled in the art would have readily appreciated mounting an optically transparent ball or a wheel in the machining head (nozzle) so that it is capable of moving along the surface of the upper workpiece while being in direct contact with the surface. One skilled in the art would have readily recognized that the wheel would be

IR-transparent so that the laser beam would pass through it to the workpieces. One skilled in the art would also have readily recognized that continuously moving the machining head would eliminate the unnecessary step of picking up the machining head (nozzle) in order to move it to the next site to be bonded. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an optically transparent ball or a wheel in the machining head in the method of Nakamata as suggested by Azdasht and/or Itagaki.

Regarding claim 5, Nakamata, Azdasht, and Itagaki are relied upon for the teaching above. Nakamata also teaches the workpieces are locally fixed in a first step at one or more defined sites with the aid of the machining head (Figures 1-4). Nakamata is silent toward the second step of the contour for the entire joint being traveled.

One skilled in the art would have readily appreciated mounting an optically transparent ball or a wheel in the machining head (nozzle) so that it is capable of moving along the surface of the upper workpiece while being in direct contact with the surface. One skilled in the art would also have readily recognized that continuously moving the machining head would eliminate the unnecessary step of picking up the machining head (nozzle) in order to move it to the next site to be bonded. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an optically transparent ball or a wheel in the machining head in the method of Nakamata as suggested by Azdasht and/or Itagaki.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Jayme L. Brown** whose telephone number is **571-272-8386**. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Dunn can be reached on 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jayme L. Brown

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GLADYS J.P. CORCORAN
PRIMARY EXAMINER